APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,795	11/12/2001	Michael J. Jones	200302026-2	7347

7590   08/23/2005

IP Administration, Legal Department
M/S 35, Hewlett-Packard Company
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER
DESIRE, GREGORY M

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/992,795	JONES ET AL.
	Examiner	Art Unit	
	Gregory M. Desire	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 June 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-37</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) <u>35-37</u> is/are allowed.

6)☒ Claim(s) <u>1-8,10-18 and 20-34</u> is/are rejected.

7)☒ Claim(s) <u>9 and 19</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>12 November 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This action is responsive to communication filed 6/9/05.

Response to Amendment

2.   Applicant's arguments filed in view of 35 U.S.C. 103 have been fully considered

but they are not persuasive. See response to arguments below.

Response to Arguments

3.   Applicant argues (remarks page 15 lines 24-25) Poggio nor Kung a fast

classification or quick object detection by employing a cascade of homogeneous

classification function (note fig. 1 blocks 14 and 18 and col. 4 line 5-6 and 25-26, shows

DBNN based classifier, being that they are both DBNN based, they are homogeneous.

The examiner interprets cascading as being in series; the output of classifier 14 is the

input of classifier 18.

4.   Applicant argues (remarks page 16 line 12) Kung channel classifiers are not

homogeneous. This argument is not persuasive because it is the position of the

examiner Kung discloses homogeneous channel classifier (note col. 4 line 5-6 and 25-

26, show both classifier as being DBNN based, thus homogeneous).

5.   Applicant argues (remarks page 16 line 19) neither Poggio nor Kung implies or

suggest a quick object detections system. This argument is not persuasive because it

is the position of the examiner Kung discloses fig. 1 block 14, immediate face detection

of an image, examiner interprets face detection as object detection.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1-8, 10-18 and 20-34 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Poggio et al (5,642,431) in view of Kung et al (5,850,470).

Regarding method, apparatus and computer useable medium claims 1, 11, 21-22, 27

and 32 Poggio discloses,

Placing a working window at different positions in an input image such that the

input image is divided into a plurality of same dimension sub windows (note col. 3 lines

48-52, image is divided into sub-image from a window); and

Providing a cascade of homogenous classification functions, each of the

homogenous classification functions in sequence respectively having increasing

accuracy in identifying features associated with certain objects (note col. 3 lines 52-53);

Employing, for each sub window, classification functions to quickly detect

instances of certain objects in the image (note col. 3 line 53-56, each window class

detects face of an image). However, Poggio is silent disclosing cascading classification

functions. Kung discloses cascading classification functions (note col. 11 lines 20-40,

DBNN classifier consisting of several classifier, examiner interprets as cascading) achieving high recognition rate (note col. 13 lines 26-32). Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to use cascading classifier in place of the conventional classifier in Poggio. Achieving high recognition rate would have been a highly desirable feature in the facial recognition art due its object detection functions and Kung recognizes that achieving high recognition rates would be expected when the cascade classifier of Kung is substituted for convention classifier of Poggio.

Poggio is silent disclosing classifier enabling real-time application. Kung discloses enabling real-time application (note Kung col. 12 line 57 processing DBNN for real-time performance). Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to enable real-time application in the system of Poggio as evidenced by Kung. Achieving improve performance (note col. 12 lines 40-45) would have been a highly desirable feature in the facial recognition art due its object detection functions and Kung recognizes that achieving improve performance would be expected when the cascade classifier of Kung is substituted for convention classifier of Poggio.

Regarding method and apparatus claims 2 and 12 Poggio and Kung discloses,

Scaling the dimensions of the sub windows by changing a size of the working window (note Poggio, col. 3 lines 55-56, reporting of different sizes, shows windows are scaled based on a change in size)

Scaling the homogenous classification functions respectively for each different size of the working window (note Poggio, col. 3 lines 57-58, classifying window is performed at different sizes), and

For each different size of the working window, repeating the step of placing, providing and employing (note Poggio col. 3 lines 48-60, shows for each size scanning and classifying occurs thus, repeated when window is scaled).

Regarding method and apparatus claims 3, 13, 24 and 29 Poggio and Kung discloses,

Employing the cascade includes utilizing the integral image representation in computing the homogenous classification functions (note Kung fig. 4 block 52 and col.10 lines 22-34, the examiner interprets integral image as input image being preprocessed before classifying).

Regarding method and apparatus claims 4, 14, 26 and 31 Poggio and Kung discloses,

Wherein certain objects are human faces (note Poggio fig. 1 block 101 and col. 3 lines 35-40).

Regarding method and apparatus claims 5 and 15 Poggio and Kung discloses,

Training the homogenous classification function in a learning phase based on a training data set and thereby identifying optimal such functions (note Kung col. 4 lines 10-13, col. 5 lines 1-20 and col. 6 lines 33-50).

Regarding method and apparatus claims 6 and 16 Poggio and Kung discloses,

Constructing the cascade based on the optimal homogenous classification

function such that the step of employing the cascade performs an average process rate

of less than 200 arithmetic operations for each sub window (note Kung fig. 5 Maxnet

shows several operations but less than 200).

Regarding method and apparatus claims 7, 17, 23 and 28 Poggio and Kung discloses,

Wherein the processing rate is independent of the sub windows (note Kung col.

11 lines 15-30, processing is based on recognition module, independent of size factors).

Regarding method and apparatus claims 8 and 18 Poggio and Kung discloses,

Providing to computer output device an output image that identifies the detected

instances of certain object based on the step of employing cascade (note Poggio fig. 1

block 114, output display device).

Regarding method and apparatus claims 10 and 20 Poggio and Kung discloses,

Wherein the features are composed of weighted sums of average pixel values

(note Poggio col. 5 lines 8-10m examiner interprets 19X19 window as having

rectangular features).

Regarding method and apparatus claims 25 and 30 Poggio and Kung discloses,

A subject sub window has the detected instance of the certain object, continuing

to pass the subject sub window through further processing (note col. 3 lines detects

face image), and

A subject sub window does not have the detected instance of the certain object,

ceasing to pass the subject window (note col. 4 lines 22-23 recognizes a state of non-

face image).

Regarding method claims 33 and 34 Poggio and Kung discloses,

Wherein the step of employing includes quickly identifying and discarding sub-

windows that do not contain instances of the certain objects (note col. 12 lines 45-50).

Allowable Subject Matter

8.   Claims 35-37 are allowed.

9.   The following is an examiner's statement of reasons for allowance for

independent claims 35-37. New independent claims 35-37 recite limitations of the

objected claims and have be rewritten in independent form. Thus are allowable.

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Conclusion

10.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory M. Desire whose telephone number is (571) 272-7449. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Gregory M. Desire
Examiner
Art Unit 2625

G.D.
August 19, 2005

KANUBHAI PATEL
PRIMARY EXAMINER